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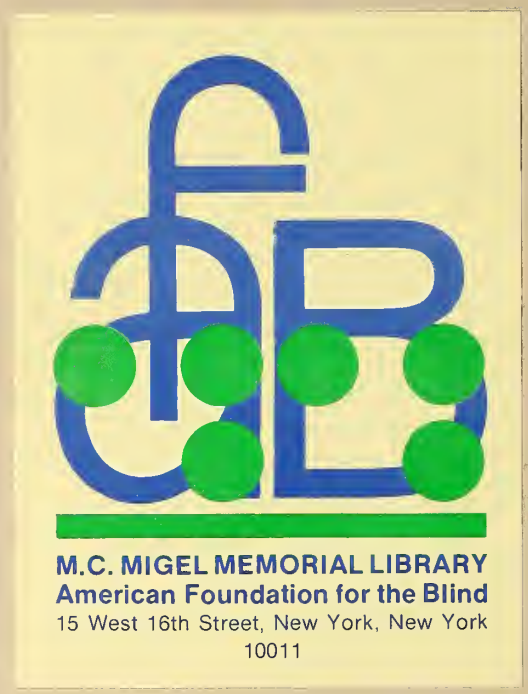
Vision Care and The Nation's Children



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PREFACE

Vision Care and the Nation's Children represents an initial effort on the part of the American Optometric Association to delineate the various aspects of vision care currently available to the children of the United States, and to suggest methods by which that care can be improved.

In May of 1966 such a survey was requested of the American Optometric Association by the United States Department of Health, Education and Welfare. V. Eugene McCrary, O.D., then President of the AOA, put the wheels in motion and through his guidance and determination this paper was ultimately published.

The American Optometric Association wishes to express its deepest appreciation to those individuals whose knowledge, dedication, and unfailing cooperation made this paper possible.

To Roberta Savitz, M.D., Henry Peters, O.D., M.A., Richard Feinberg, Ph.D., Lois Bing, O.D., William Moeny, O.D., Nathan Flax, O.D., John Harrison, O.D., Melvin Dunbar, O.D. and currently President of the American Optometric Association, and Miss Nan McKinney and Mr. David Sharman of the Washington, D.C. office of the American Optometric Association, we are eternally grateful for the many hours they unstintingly gave to see this document reach its final form. To them and to the many others who made *Vision Care and the Nation's Children* possible, we offer a sincere and heartfelt "Thank you."

Harold L. Friedenberg, O.D., Chairman
American Optometric Association
Committee on Visual Problems of Children
and Youth.

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CONTENTS

		Page
Preface		1
Introduction		3
Part I	Vision Defects of American Children	7
	A. Extent of defects	7
	B. Types of defects	7
Part II	Importance of Vision Care	10
	A. Pre-school years	10
	B. Elementary school	11
	C. Secondary Schools and beyond	13
Part III	Services for Vision Care Today	15
	A. Manpower resources	15
	B. Extent of vision testing and care	27
	C. Special problem areas	29
	D. Governmental support	33
PART IV	Recommendations	39
	A. Vision screening and examination	39
	B. Research and demonstration	42
	C. Training Assistance	42
	D. Improved statistics on vision care	43
	E. Improved coordination among vision care personnel	43
Bibliography		44

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INTRODUCTION

No sense is more important to a person than his sight. It is estimated that 80% of all learning during a child's first 12 years is obtained through his vision. An intimate relationship exists between vision and school achievement, vision and social adjustment, vision and safety, vision and recreation, vision and total health.

An uncorrected vision problem restricts the child's ability to cope with opportunities presented as well as negatively affecting his achievement, his health and his general welfare.

Visually inadequate children are those who cannot cope with the seeing tasks of the world in which they find themselves. Four out of every 10 children in schools and colleges are visually handicapped in one form or another for adequate school achievement.[1] Yet reliable estimates show that less than one and one-half percent of all children are actually born with organically defective eyes or eye muscles.

Therefore the visually handicapped child in many cases is simply one who has never become skilled in seeing and developing his visual abilities to the level where they will permit adequate functioning.

Research in education, optometry, medicine and psychology support the contention that visual acuity, the ability to identify small letters, is not the only visual function. Nor is acuity the only important function involved in the acquisition of knowledge through the visual sense. The child must learn to associate visual stimuli in the brain with previously received stimuli from all the other senses, then, on the basis of vision alone understand the things he cannot touch, taste, smell or hear.

Seeing, like so many other body functions, must be developed and mastered in order to be effective. It has been said that the child spends his first three years in school learning to read and from the fourth grade on, he reads in order to learn. Therefore a visual problem which goes uncorrected during the learning-to-read years creates an additional deterrent to the child's learning process or ability in the future.

At least six visual skills must be learned and developed for adequate school achievement, skills which must be maintained at a peak of efficiency not only during school years, but throughout the individual's productive lifetime. Needed visual skills are:

(1) acuity at distance (beyond arm's length)
(2) acuity at close range (within arm's length)
(3) binocular coordination (two eye team work)
(4) field of vision (side vision)
(5) form and span of vision (recognition span)
(6) ocular motility (movement ability)

Vision care is an essential ingredient of any well conceived health program for children. The need for this care exists and the recognition of the extent and implication of the unmet needs continue to grow. Every day more and more vision care specialists are astonished by the lack of public awareness on the need for and value of vision care for their children. Vision care practitioners are well aware of existing programs' shortcomings and the need for better programs.

In this report, the American Optometric Association describes the nature of vision defects in children, the need for vision care, and the state of child vision care in America today. The report concludes with recommendations for decisive action toward better vision care for the children of this nation.

Throughout this report terms will be used relating to various aspects of vision and vision care. To enable the reader to more easily understand this report, the following definitions apply:

Visual acuity—ability to see at both near point and distance.

Visual perception—ability to relate things seen with information gained from other senses.

Vision—visual perceptual training—the utilization of lenses, prisms, and/or specific vision training or orthoptic procedures to enhance visual performance and visual efficiency.

Vision screening—initial recognition of the possibility of vision difficulty.

Vision care—identification of vision anomaly and treatment by means of visual training, visual perceptual training and/or lenses; professional vision care.

Visual efficiency—the ability to utilize and process visual stimuli in the most complete and competent manner possible.

Comprehensive vision care—concern with and care for the individual's ability to achieve by means of what is seen; involving ocular motility, binocular coordination, perceptual skills and field of vision as well as acuity for distance, intermediate distances, and near.

Amblyopia—a nonorganic loss of vision, usually in one eye, caused by the suppression of vision in the affected eye.

Dyslexia—an inability to learn to read successfully.

Strabismus—the deviation—in or out—of one or both eyes from parallelism during the state of physiological rest.

* CLINICALLY SIGNIFICANT VISION PROBLEMS OF CHILDREN BY AGE GROUP

CHART I

(in thousands and percents)

Age Group	0-4		5-9		10-14		15-19		TOTAL	
	#	%	#	%	#	%	#	%	#	%
Population 1965	21,242	(100)	20,420	(100)	18,888	(100)	16,977	(100)	77,527	(100)
Vision Problems										
Visual Acuity	850	(4)	1,225	(6)	1,700	(9)	3,059	(18)	6,834	(9)
Amblyopia	425	(2)	408	(2)	378	(2)	340	(2)	1,551	(2)
Refractive Error										
Myopia	212	(1)	613	(3)	2,267	(12)	2,886	(17)	5,978	(8)
Hyperopia	1,487	(7)	1,225	(6)	1,133	(6)	1,019	(6)	4,864	(6)
Astigmatism	425	(2)	613	(3)	567	(3)	509	(3)	2,114	(3)
Anisometropia	425	(2)	613	(3)	756	(4)	849	(5)	2,643	(3)
Coordination Problems										
Squint	850	(4)	817	(4)	756	(4)	679	(4)	3,102	(4)
Esophoria	212	(1)	408	(2)	378	(2)	340	(2)	1,338	(2)
Exorphoria	425	(2)	613	(3)	567	(3)	509	(3)	2,114	(3)
Hyperphoria		*		*		*		*		*
Organic Problems										
Congenital	212	(1)	204	(1)	189	(1)	170	(1)	775	(1)
Traumatic		*		*		*		*		*
Disease	212	(1)	204	(1)	189	(1)	170	(1)	775	(1)
Performance Problems										
Vision Performance	1,062	(5)	2,859	(14)	3,966	(21)	4,244	(25)	12,131	(16)
Vision Development	?	?	2,042	(10)	2,267	(12)	1,358	(8)	5,667	(7)
Vision Perception	?	?	817	(4)	944	(5)	679	(4)	2,440	(3)
Total Conditions	6,797	—	12,661	—	16,057	—	16,811	—	52,326	—
Total Children	2,549	(12)	4,084	(20)	4,722	(25)	5,263	(31)	16,618	(21)

*Less than 0.5%

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*Based on Estimated 1965 Population and Results of a Survey conducted by Henry B. Peters, O.D., M.A.

CHART II

NUMBER OF CHILDREN WITH HANDICAPPING CONDITIONS

	1960	1970
Epilepsy (under 21)	360,000	450,000
Cerebral palsy (under 21)	370,000	465,000
Mentally retarded (under 21)	2,180,000	2,720,000
Eye conditions needing specialist care including refractive errors (5-17)	10,200,000	12,500,000
Hearing loss (under 21)	360,000-725,000	450,000-900,000
Speech (5-20)	2,580,000	3,270,000
Cleft palate — cleft lip	95,000	120,000
Orthopedic (under 21)	1,925,000	2,425,000
Congenital heart disease	About 25,000 born each year, of whom 7,000 die in the first year	
Emotionally disturbed (5-17)	4,000,000	5,400,000

Source: HEALTH OF CHILDREN OF SCHOOL AGE, Children's Bureau, 1964.

PART I

VISION OF AMERICAN CHILDREN

A. *Extent of Defects*

There exists overwhelming evidence of the need to determine how significant a proportion of children have vision problems which interfere with health and performance, and how many of these problems are undetected or unrecognized. The shocking element is that there is already enough evidence to state that if these problems were detected in time, many could be corrected or compensated for by using available techniques and knowledge.

Unfortunately, as the child grows and develops, so do vision problems. They change with him and new problems appear. Thus continuing close surveillance and care are required until the visual system attains stable maturity, usually in early adult life.

According to a recent statistic released by the Children's Bureau, by 1970 an estimated 12.5 million school-age children (5-17 years) in the United States will require special ocular care, including correction of refraction errors.[6] This total includes refractive error, squint and amblyopia, but does not include every child with a vision defect. Bureau of Census projections say that at that time (1970) there may be some 53 million children between the ages of 5-17.[3]

Should this be the case, it means that one in four children will have some visual defect . . . a startling statistic. Some studies indicate an even higher incidence of vision defects.

According to the Bureau of Census, in 1963 there were 16.9 million children between the ages of 1-4 in the United States. Using a conservative rate of 5% based on preschool screening figures, one million is the estimated number of preschool children who will have vision problems by 1970.

The National Education Association reports that only 16.6% of children between the ages of 5 and 19 years wear optical corrections.[4] However, the actual need is so great that twice as many of the children in this age bracket should use some form of optical aid. The problem lies in the fact that some schools do not screen for vision difficulty at all or screen only very gross difficulty. Too few schools offer tests adequate for appraising the total visual performance required for success in school.[8] The most common testing device is the Snellen Chart which seeks to gauge only distance visual acuity. Yet the major portion of school-work is done at a distance of 10 to 20 inches.[7] (Charts I and II).

B. *Types of defects*

The visually handicapped child, as generally defined, is one whose visual limitations interfere with his learning efficiency.

Visual defects, are often categorized for reference into three groups. They are:

1) *Blindness:* defined as noncorrectible visual acuity of less than 20/200 in the better eye or a visual field of less than 20 degrees.

2) *Partial Sightedness:* corrected visual acuity of 20/70 to 20/200.

3) *Sighted:* at least 20/70 visual acuity in the better eye, but requiring professional attention before full utilization of visual capacities is possible.

Different investigators choose different fundamental definitions, thereby making prevalent figures for the "sighted group" most variable. It is difficult to measure a borderline group with moderate deviations. This is because there is professional disagreement as to what constitutes a remediable defect in need of care and what represents a normal variation.

Causes of blindness in the 58% of the legally blind school children surveyed in 1958-59 are:[3]

		*Estimated 1962
Heredity, prenatal factors (structural anomalies, cataracts, retinitis pigmentosa, prenatal optic atropy, congenitial glaucoma, myopia, albinism, etc.)	48%	56.15%
Retrolental fibroplasia (RLF)	33%	23.70%
Infectious diseases (toxoplasmosis, maternal rubella, syphilis, tuberculosis, gonorrhea, etc.)	4.0%	3.85%
Injuries	2.4%	1.75%
Tumors (especially retinoblastoma)	3.5%	4.25%
General diseases (cerebral palsy, hydrocephalus, meningitis, diabetes, etc.)	1.6%	1.55%
Unknown or unrecorded	7.7%	8.75%

Prenatal influence is the largest single cause of blindness in the entire life cycle. Some of this prenatal and early infancy blindness is preventable, even now. For example, most new cases of RLF can be prevented by the controlled administration of oxygen to premature infants.[3] The very sad RLF epidemic between 1940 and 1954 produced almost 8,000 blind and partially sighted babies. This ended when incubator oxygen was found to be the etiologic agent. Care patterns were then immediately revised. A few sporadic new cases still develop where unusual oxygenation of the retina occurs, either in treatment or in the course of other disease entities.

The widespread use of prophylaxis and immediate treatment for ophthalmia neonatorum has decreased by 75% the infectious disease-based blindness. The treatment has taken place in the last quarter century and should soon eradicate this type of blindness completely.

Laws and regulations of all states and the District of Columbia include some reference to the use of prophylaxis. As of 1957, drugs were supplied free by 34 state departments of health and 32 states required birth certificates to note that an ocular prophylactic agent had been administered.

*1962 estimate of 38,860 legally blind children (through age 19) compiled by N.S.P.B. The startling fact about this tabulation is that for 84% of the legally blind children, blindness begins before the first year of life.

Toxemic mothers show a high incidence of ocular and cerebral hemorrhage in the infants born to them. However, timely obstetrical intervention sometimes prevents subsequent ophthalmoplegia and optic nerve atrophy.

The role of anesthesia during delivery requires special recognition in any preventive program. The visual system is inevitably affected to a more or less obvious extent by a traumatic or anoxic birth. The effect varies from the apparently uncomplicated, latent strabismus, to the severe, cerebral palsy with an oculomotor component.

The causes of partial sightedness have not been surveyed recently and therefore the percentages have changed since this 1952 tabulation.[3] The main reason for this change in partial sightedness is the discovery of the cause of RLF.

The causes of *partial sightedness were:*

Heredity and prenatal factors	22%
Infectious disease	3%
Injury	2%
Refractive errors (myopia, hyperopia, astigmatism)	49%
Defects of muscle function (strabismus, nystagmus, and amblyopia ex anopsia)	18%
Other	6%

Blindness and impaired vision have considerably decreased, except for tumors and hereditary causes. This is due to public health education and such direct measures as routine syphilis testing and prophylaxis for ophthalmia neonatorum. An improvement in the understanding of normal visual growth and development, and of refractive errors and ocular muscle function will bring further reductions in the number of blind persons and those with impaired vision.

The refractive errors and ocular muscle function defects accounted for 67% of partially seeing children and almost all visual problems of the 12.5 million "normal sighted" children. Much of this vision loss is preventable, with timely detection and attention during the vulnerable preschool years. Some may be reclaimed later in life with new techniques as they become known.

A major problem now is that so little is really known generally about vision care. It is even difficult to find statistics to support claims or to aid in research. With the importance vision plays in the development of the child, this lack of knowledge cannot be accepted. An effort must be made and made soon to overcome these shortcomings which now exist.

PART II

THE IMPORTANCE OF VISION CARE

There is no such thing as health care without vision care. Thus any comprehensive program of health care for children must include vision care.

In today's visually-oriented world, an integral, inseparable relationship exists between vision and school achievement, vision and social development, vision and safety, vision and delinquency, vision and recreation. Good vision can light a child's way toward success and fulfillment. But poor vision, undetected at an early age, can light a fuse that produces poor reading, slow learning, emotional maladjustment, and, ultimately, a sociological explosion.[4]

Regardless of whether vision is good or poor, both should demand the same intensity of professional care and attention, especially in the developing years of childhood. And, as we shall illustrate, this is a shared responsibility. It involves the parent, the pediatrician, the school, and the professional vision care specialist as well as the community at large.

A. *THE PRESCHOOL YEARS*

It may well be that the preschool years are the most important of all for securing proper vision care. According to an extensive study of child vision care prepared for the U. S. Children's Bureau by Dr. Roberta A. Savitz, "Vision develops most rapidly in the first year of life."[3] The 28-week premature infant reacts to bright light with grimacing. A full-term normal infant can fix and follow. Acuity at 16 weeks is approximately 20/300 and at 9 months 20/200. At one year it approaches 20/100 and at 2 years, 20/50. Eye movements which seem jerky and inexact for the first few months become smooth and coordinated by 6 months. Binocularity is gradually developed in the next 3 years.

From then on vision increases in importance. For example, Dr. Marianne Frostig, developer of the Frostig Program for the Development of Visual Perception, has concluded after a major study that "between the ages of 3 1/2 and 7 1/2, visual perception is the child's major development task."[30]

Attention to the child's vision is now considered feasible and desirable at this time when visual perception should be developing. As stated by a Children's Bureau report on *Vision Screening of the Preschool Child:* "Children from 30 months on can be screened, even though about 50 per cent of the younger subjects might be nontestable. It is better to start early, not only because early detection permits more effective treatment, but also because it seems to take so long for referrals to seek professional attention."[38]

The desirability for preschool vision care can be illustrated in the case of amblyopia. The infant or young child whose eyes do not record the same pictures because they are out of line (strabismus: cross-eye, or wall-eye), or differ in refraction, will either suppress this vision from one of his eyes rather than experience double vision, or have dim vision due to an undetected refractive error. Visual acuity in the defective eye may not develop, producing the dimness of vision, or "lazy eye blindness" known as amblyopia.

It would appear, though data is inadequate, that amblyopia is on the increase. According to Dr. Savitz, "the rate of amblyopia can be expected to rise along with the indicated increase in the prevalence of strabismus, to almost 10% in some groups of young children."[3] Another indication comes from a study in Detroit schools which is reported as follows by the Children's Bureau in the report, *Health of Children of School Age:*

> "If we are to be concerned with prevention, we must test children's vision before they enter kindergarten. In the city of Detroit alone, well over a thousand children each year enter the ranks of the one-eye blind (amblyopia) for lack of detection and treatment in the preschool years . . .
>
> "Their parents, in some cases, were victims of misinformation. In Franklin School, 96 children could pass the Snellen 'E' test with one eye only—an average of two in every classroom. No doubt many of these have joined the unenviable ranks of the one-eyed, although most of this could have been prevented through early detection and care."[6]

Amblyopia, as the Detroit example hints, is just one facet of the vision problem among preschool children. This happens to involve a relatively few children. For the greater majority of children whose vision may be termed normal, or correctible to normal, vision care is an important part of getting ready for the learning process. A visually immature child functions at as great a disadvantage as the emotionally immature child. Thus comprehensive vision care can and should be a part of his life before entering school.

A longitudinal study of Grades 1 through 6 at the Thomas Jefferson School, Euclid, Ohio, found 9% or 136 first graders to be strabismic.

B. *VISION IN ELEMENTARY SCHOOL:*

Once a child enters school, he is already, in some instances, literally past the point of no return. Where children used to have perhaps one reader for the duration of their first grade term, they may now be called upon to work through as many as 20 books in a year. Thus it may come as no surprise that in the first grade a correlation exists between scholastic achievement and visual efficiency. Vision is usually the primary avenue for learning to read.

A 1963 study (the relationship between a measure of visual efficiency and scholastic achievement, Harry H. Howarth III) indicated that the vision test scores obtained in the first grade were significantly related with reading-achievement test scores obtained as late as grade 6.

As he progresses through elementary school, a child's ability to achieve through reading takes on ever greater importance. This is because at the midway point in elementary school (usually in the third or fourth grade) the emphasis changes from *learning to read* to *reading to learn.* It is at this point when competition for achievement in all aspects of school life grows more intense. It is also at this point that a child with an undetected vision problem may encounter his first serious emotional difficulties. Doctor Harold L. Friedenberg, a practicing Richmond, Virginia, optometrist, specializing in child vision problems, states that "a child under visual stress frequently encounters emotional problems. If neglected past the fourth grade, he has in all likelihood already acquired certain psychological scars which may not be healed."

Doctor Friedenberg's views are supported by a study in California entitled "Assessment of Visual Perception and Its Importance in Education," which concluded that "a child with disabilities in visual perception is likely to have difficulties in areas of behavior other than academic learning alone." It stated that when a test was administered to 350 children at the kindergarten and first and second grade levels in a number of public schools in California, "the results showed a strong relationship between disabilities in visual perception and poor classroom adjustment."[7]

Yet vision screening and treatment have demonstrated an ability to improve such conditions, even when instigated on a minimum scale. For example, one continuing study of some 5,000 school children in the Summit County Schools of Akron, Ohio, revealed that approximately one-third had not developed the visual perceptual abilities it was felt they would need for their early success in learning." These problems are demonstrated by their inability to perceive form and attend to detail, poor fine motor skills, general motor incoordination, and poor language development.

Since then, a rudimentary vision care program has been established, operated primarily by classroom teachers without professional vision training. Still, results showed that 350 pupils "were helped significantly in their ability to achieve in the classroom."

A more vivid example can be given right here in Washington, D. C. On April 16, the *Washington Post* carried an article about a Miss Clotilda Barnett, the teacher of a so-called "slow" second grade class in the District's Cardoza Model School Division. It was Miss Barnett who, after routine screening tests with a Snellen chart, found that nineteen of the thirty-four children in her class were afflicted with visual defects.

It was mere chance, she supposed, that so many of her children had visual problems. But that so many vision problems should be in one "slow" classroom seemed to indicate that visual difficulties were retarding the children. Because they had been grouped by academic ability, they ended up together.

After the vision test, however, Miss Barnett found out that three of her supposedly subnormal children were nearly blind. One of them, named Barry, had been, in her words, "restless, inattentive, and annoying."

"In addition," she said, "he was only beginning first grade work. The total picture was so bad that I asked for an evaluation of the child."

It turned out that he had an IQ of 103. "It was then," Miss Barnett said, "that I knew his eyes were the trouble."

The boy's parents were advised of the problem and they were able to provide him with prescription glasses. "Since then," Miss Barnett said, "he's gone through the preprimer, the primer, and now the first reader. He's an able boy and doesn't belong in the slow class."

Miss Barnett said that when she became aware of the vision problem in her class, she asked the school nurse to try to arrange for a vision examination at a nearby public health clinic. The best they could arrange for, however, was an appointment six months hence. But Miss

Barnett decided the children couldn't wait that long. She and four other teachers formed a group called "Sight-Saving, Inc." and have set about raising funds to provide indigent children with professional vision care. It is interesting to note that members of the Optometric Center of the District of Columbia performed a vision examination, at no expense, for each child and a local business group provided funds for needed eye-wear.

Unfortunately, the case of Miss Barnett is not typical. Few teachers would undertake what she has done. The case of her pupils, however, *is* representative. Miss Barnett's own findings are crudely illustrative of the pressing need most American elementary school children have for professional vision screening and comprehensive vision care.

C. *SECONDARY SCHOOL—AND BEYOND*

At one point it was felt that visual defects were apt to "level off" once a student reached secondary school and college. This statement, however, is not entirely accurate. While it is true that visual conditions generally do not change as radically as a youth enters his teens, it is also true that the older the person the less capable he is of adapting to small visual changes.

There is still great opportunity for productive visual training at the secondary school age. Yet it is also the age where the lack of prior visual attention is apt to reflect itself most dramatically. Certainly, it is the area where visual training (or lack of it) begins to make itself felt on society. Vision is associated with several crucial social problems which involve young people. For example:

Driving: The young person who enters high school expects to drive an automobile before long. If he is fortunate, he may enroll in a formal driver education program in his school. If so, he will find that vision is an integral part of driving. Some ninety per cent of all driving decisions are based upon vision. Yet today, one out of six drivers has a vision handicap of which he is unaware.[8] Thus a vision care program woven into a regular driver instruction course could pave the way toward reducing the number of young people poorly equipped visually to assume their responsibility as drivers.

School Dropouts: Too often a visual problem may contribute to a young person's leaving school—all before any vision screening or vision care has been attempted. The U. S. Department of Health, Education, and Welfare estimates that there will be a total of 7.5 million dropouts in the period 1962-1970. This represents 16.3% of the total elementary and junior high school student body of approximately 46 million boys and girls.

What relation do these statistics bear to vision? A survey of pupils who did not complete high school in the Euclid, Ohio, public schools indicates that these children had one deficiency in common: a reading problem which expresses itself in poor or failing grades in reading in elementary school, and in failing grades in English in secondary schools.

In other words, there is a considerable correlation between dropouts and reading deficiency which could be related to poor visual efficiency.

Juvenile Delinquency: While in many instances school dropouts make up most of the juvenile offenders, such is not always the case. However, it can be said that there exists as

strong a correlation between poor vision and the juvenile delinquent as there does between poor vision and the school dropout.

There are several optometric studies linking poor vision and juvenile delinquency. Here is one pertinent statement, however, by F. R. Hilpert, Chief Clinical Psychologist to Sing Sing Prison, N. Y.:

> ". . . preliminary statistics indicate a definite link between visual defects and educational failure—and, still further, a strong link between educational failure and antisocial behaviour.
>
> "Several studies, including my own at Iowa State Prison and Sing Sing Prison, show that while inmates have less education than the general public, they are *not* inferior in intelligence. One test showed that 45% of prisoners could have finished high school . . . yet only 13% did. Why? Finances, inadequate local schools, family pressures—and reading difficulties traceable to poor vision.
>
> "The White House Conference on Juvenile Delinquency (sic) White House Conference on Children and Youth, 1960) bears out various prison studies of my own. Up to 80% of the delinquents and semidelinquents studied by the Conference had learning difficulties, specifically in reading—and poor vision was found to be a contributing factor in 50% of these cases."

A comprehensive program of vision care in the secondary schools cannot heal all of the psychological wounds brought on earlier by neglected vision and other problems. It can, however, make important psychological and sociological contributions.

Employment: The great majority of young people who do stay in school, learn so they can take their place in society in responsible positions of gainful employment. Yet vision can be as important a factor in preparing for a job as is learning. Through vision testing, a student may be advised that he has little ability to perform certain kinds of work, while possessing a high ability in other areas. It goes without saying that the poorer one's vision, the more limited his choice of occupations.

Armed Services: In a great many instances, a youth's first "gainful employment" will not be in civilian life, but as a member of our armed services. Yet here again, vision will figure importantly, both to the individual and to the national interest. Once he is accepted into the service, vision constitutes a factor in the role and responsibilities the inductee will be able to perform.

Vision, in fact, often determines one's ability to join the armed services in the first place. In one study of physical disqualification of draft-eligible youths between 1953 and 1958, "eye diseases and defects" accounted for 1,260 out of every 10,000 rejections, the fourth leading cause for disqualification.[10] There is no study indicating how many of these "rejects" might have been able to serve in the armed forces had they had proper vision care. At age 18 some vision defects are considered not correctible to standard. The large number rejected for mental reasons may also have visual problems as well.

PART III

PROFILE OF SERVICES FOR VISION CARE TODAY

A. *MANPOWER RESOURCES*

It is not enough to discuss vision care *per se*. There is a very important element without which vision care does not exist, and that element is manpower—the means by which vision care is accomplished.

Vision care, in its broadest sense, should be the concern of many professional, subprofessional, and technological groups. Proper attention to the child's eyes begins with the obstetrician's role in antenatal care. He is assisted in this role by the public health nurse and the health educator. An important role is also played at delivery by the anesthesist. Immediately after birth the pediatrician and general practitioner care for the child's eyes.

Preschool vision screening tests are often performed by trained volunteers or technicians. In school, the teacher many times performs the vision screening tests. Social workers may play a variety of roles in identifying and following children's vision problems. But ultimately the responsibility for diagnosis and treatment of vision problems rests with optometrists and ophthalmologists.

The responsibility for the visual welfare of a child is shared by all these groups. Yet this loose organization of vision care is inadequate, as is borne out by the results of professionally performed vision screening programs and clinical studies. They show that 8 to 12 per cent of elementary school children are found to have previously undetected vision problems.[12]

The following charts (III and IV) show the approximate relationship between the various professional groups and their responsibilities, in terms of usual functions for the detection of vision problems of children.

Unfortunately, even with all these groups detecting and treating vision problems, it is still not enough.

There exists today a manpower shortage of professional people engaged in visual care. Today's shortage, plus the deficiencies which will mount in the future, will have to be met by the efficient co-ordination of present efforts as well as training increasing numbers of personnel in traditional and new ways to meet the growing needs of the growing population.[3]

Figures given in Chart V for the number of practicing optometrists and ophthalmologists per 100,000 total population and per 100,000 (under 21 years) population represent an overstatement with respect to the number actually available to care for children's visual problems.

Ophthalmologists and otolaryngologists are listed together so that these values are immediately much too high by almost 30 percent of the 11,865 full-time specialists. A total of 5,759 are engaged in ophthalmology practice alone and 2,796 in ophthalmology and otolaryngology. The number of M.D.s includes physicians in training programs and some in nonclinical full-

time practice.[3] The 1965 educational issue of the American Medical Association listed three per cent, or 8,123, of all physicians as ophthalmology specialists of whom less than half are Board certified.

According to the Bureau of Census, there are 25 per cent fewer optometrists actually engaged in practice than are licensed to practice.

Another limiting factor relating to child vision care is that most optometrists' and ophthalmologists' practices primarily consist of adults rather than children. This is because most visual pathology requiring medical attention occurs in later years. It is just recently that some eye specialists have begun to limit their practices to children.

There are now four physicians who are diplomates of both the American Board of Ophthalmology and the American Board of Pediatrics. The Children's Hopsital of Washington, D. C., has a Pediatric Ophthalmology Training Program to train physicians to become specialists in Pediatric Ophthalmology.[3] The American Optometric Association's Committee on Visual Problems of Children and Youth encourages optometric research on the subject of children's vision. Committee members and many other optometrists participate in local, national, and international conferences and programs relating to children's vision.

This distribution of optometrists and ophthalmologists is also of concern, particularly with respect to the distribution of the population of children. Chart V, which breaks down the distribution by states, shows that ophthalmologists tend to congregate in the large cities, whereas optometrists are more widely disbursed in small cities and towns. (see also Charts VI and VII)

Future manpower shortages become obvious when we check the medical school statistics. They show that ophthalmology, one of the oldest medical specialties, has indicated one of the lowest percentage gains (under 200%) in number of physicians since 1931. In 1935, 3.7 per cent of medical school graduates chose to specialize in ophthalmology. In 1950, 0.2 per cent chose this specialty. It is a specialty rated "most liked" by only one per cent of medical students and "least liked" by four per cent. (Otolaryngology, anesthesiology, physical medicine and rehabilitation rank lower.)[3]

Another disconcerting fact is that the extent of training of those already in practice has also diminished. In 1935, 72 per cent of ophthalmologists and otolaryngologists had medical board certificates. In 1950, 70.6 per cent were certified.[3] In general, the states with the lowest ratio of ophthalmology to population have a greater percentage of less highly trained people.

As mentioned earlier, even the most highly trained ophthalmologists often lack specialized training in children's vision. In the preface to his book, *Diagnostic in Pediatric Ophthalmology,* Apt states:

> "Diagnosis of an eye problem in the adult patient is rarely difficult because of problems in testing . . . reliance on objective rather than subjective responses must necessarily be greater in the pediatric patient and the examination may be less than satisfactory. . . . The question often asked is: 'I know what diagnostic procedures to use in the adult patient, but how do I accomplish these and interpret them when dealing with a child?' "[39]

CHART III

RESPONSIBILITIES FOR DETECTING VISION PROBLEMS BY PROFESSION

Vision Problems	Pediatrician	Ophthalmologist	Optometrist	Educators, School Nurse	Psychologist
Disease	X	X	X		
Acuity	X	X	X	X	
Squint	X	X	X		
Refractive Error		X	X		
Co-ordination			X		
Visual Performances			X	X	X
Developmental			X	X	X
Perception			X	X	X

CHART IV

The treatment of vision problems involves complex and overlapping relationships involving a variety of professions. The nature of these relationships are illustrated in the following Table.

Interprofessional Relations in Treatment of Children with Vision Problems

Percent Children			
4%	(Organic Problems (Congenital (Traumatic (Disease	uniquely	ophthalmology
20%	(Refractive Error (Visual Acuity (Squint	shared	optometry ophthalmology
10%	(Visual Performance (Coordination problems (Vision training (Developmental vision	uniquely	optometry
6%	(Vision Perception (as it affects reading	jointly	optometry educational psych.
1%	(Visual Rehabilitation (Visually handicapped (Brain injured (Mentally retarded	jointly	optometry ophthalmology psychology rehabilitation personnel special teachers
100%	(Visual environment (lighting (safety	jointly	lt. engineer architect optometrist
100%	(Vision health education	jointly	optom., ophth., health ed. nurse/teacher

CHART V

NUMBER, RATIO, AND DISTRIBUTION OF VISION CARE MANPOWER

STATE	1963 Total Civilian pop. (in thousands)	Population Total under 21 years	Optometrists 1963	Rate per 100,000 population	Rate per 100,000 child pop.
U.S.	186534	78420	20,872	11.2	26.6
Ala.	3323	1494	194	5.8	13.0
Alas.	215	119	18	8.4	15.1
Ariz.	1539	683	117	7.6	17.1
Ark.	1844	804	146	7.9	18.2
Calif.	17281	7013	2434	14.1	34.7
Colo.	1903	810	197	10.4	24.3
Conn.	2655	1054	277	10.4	26.3
Del.	467	203	32	6.9	15.8
D.C.	787	281	94	11.9	33.5
Fla.	5556	2147	488	8.8	22.7
Ga.	4051	1858	290	7.2	15.6
Hawaii	630	317	64	10.2	20.2
Idaho	706	307	95	13.5	30.9
Ill.	10133	4080	2060	20.3	50.5
Ind.	4685	1980	532	11.4	26.9
Iowa	2778	1118	361	13.0	32.3
Kan.	2187	898	250	11.4	27.8
Ky.	3054	1331	250	8.2	18.8
La.	3383	1557	257	7.6	16.5
Me.	963	407	132	13.7	32.4
Md.	3227	1409	191	5.9	13.6
Mass.	5175	2029	869	16.8	42.8
Mich.	8092	3431	801	9.9	23.3
Minn.	3494	1488	419	12.0	28.2
Miss.	2262	1067	130	5.7	12.2
Mo.	4298	1702	543	12.6	31.9
Mont.	697	306	91	13.1	29.7
Neb.	1442	598	183	13.7	30.6
Nev.	360	159	30	8.3	18.9
N.H.	620	255	84	13.5	32.9
N.J.	6421	2499	732	11.4	29.3
N. Mex.	996	484	66	6.6	13.6
N.Y.	17663	6508	1882	10.7	28.9
N.C.	4669	2099	336	7.2	16.0
N. Dak.	623	289	77	12.4	26.6
Ohio	10153	4105	1066	10.5	26.0
Okla.	2452	971	266	10.8	27.4
Ore.	1820	741	331	18.2	44.7
Penna.	11404	4376	1404	12.3	32.1
R.I.	858	340	145	16.9	42.6
S.C.	2422	1172	168	6.9	14.3
S. Dak.	731	1309	101	13.8	32.7
Tenn.	3664	1556	322	8.8	20.7
Tex.	10139	4425	821	8.1	18.6
Utah	978	465	91	9.3	19.6
Vt.	390	168	39	10.0	23.2
Va.	4189	1815	287	6.9	15.8
Wash.	2991	1219	398	13.3	32.6
W. Va.	1777	757	153	8.6	20.2
Wis.	4056	1700	465	11.5	27.4
Wyo.	333	147	39	11.7	26.5

CHART V
(Continued)

NUMBER, RATIO, AND DISTRIBUTION OF VISION CARE MANPOWER

STATE	Ophthalmologists & Otolaryngologists (1961)	Rate per 100,000 population	Rate per 100,000 child pop.	1962 Percent practitioners		Municipalities Served — 1962	
				OD	MD	OD	MD
U.S.	11,321	6.3	14.4	71	29	5116	1992
Ala.	125	3.8	8.4	67	33	73	25
Alas.	5	2.3	4.2	80	20	5	1
Ariz.	65	4.2	9.5	59	41	24	13
Ark.	55	4.1	6.8	79	21	67	23
Calif.	1257	7.3	17.9	72	28	369	182
Colo.	140	7.4	17.3	63	37	43	19
Conn.	194	7.3	18.4	68	32	77	36
Del.	22	4.7	10.8	62	38	10	5
D.C.	126	16.0	44.8	67	33	1	1
Fla.	272	4.9	12.7	57	43	119	54
Ga.	152	3.8	8.2	69	31	103	36
Hawaii	43	6.8	13.6	68	32	14	6
Idaho	33	4.7	10.7	75	25	35	10
Ill.	662	6.5	16.2	82	18	290	93
Ind.	234	5.0	11.8	74	26	143	45
Iowa	161	5.8	14.4	76	24	137	40
Kan.	105	4.8	11.7	74	26	103	40
Ky.	127	4.2	9.5	72	23	101	35
La.	221	6.5	14.2	64	36	72	24
Me.	54	5.6	13.3	77	33	52	17
Md.	205	6.4	14.5	59	41	55	26
Mass.	387	7.5	19.1	75	25	195	69
Mich.	410	5.1	11.9	74	26	205	70
Minn.	221	6.3	14.9	74	26	132	36
Miss.	67	3.0	6.3	68	32	64	23
Mo.	274	6.4	16.1	77	23	154	44
Mont.	41	5.9	13.4	72	28	38	12
Neb.	77	5.3	12.9	76	24	69	19
Nev.	17	4.7	10.7	69	31	8	3
N.H.	40	6.5	15.7	72	28	29	11
N.J.	361	5.6	14.4	70	30	205	101
N. Mex.	33	3.3	6.8	69	31	24	15
N.Y.	1597	9.0	24.5	65	35	312	165
N.C.	205	4.4	9.8	66	34	128	67
N. Dak.	30	4.8	10.4	76	24	39	9
Ohio	553	5.4	13.5	73	27	240	84
Okla.	115	4.7	11.8	73	27	87	35
Ore.	124	6.8	16.7	77	23	66	22
Penna.	870	7.6	19.9	77	23	336	155
R.I.	52	6.1	15.3	84	16	21	7
S.C.	71	2.9	6.1	72	28	71	20
S. Dak.	21	2.9	6.8	82	18	45	10
Tenn.	164	4.5	10.5	71	29	87	27
Tex.	486	4.8	11.0	67	33	208	91
Utah	63	6.4	13.5	62	38	25	8
Vt.	20	5.1	11.9	73	23	20	8
Va.	208	5.0	11.5	63	37	90	42
Wash.	186	6.2	15.3	71	29	93	30
W. Va.	81	4.6	10.7	70	30	67	24
Wis.	207	5.1	12.2	73	27	146	45
Wyo.	18	5.4	12.2	70	30	19	9

CHART VI

ANALYSIS OF OPTOMETRIC NEEDS BY STATES BY 1970

STATE	Population 1960 (est. nearest thousand)	Population 1970 (est. nearest thousand)	Percent population increase 1960 to 1970	Approximate number Optometrists 1962	Optometrists per capita 1962	Addit. Optometrists by 1970 to serve 1 to 7,000 ratio	
						Growth	Attrition
Ala.	3267000	3484000	7	192	1 for 17,015	325	19
Alas.	226000	260000	15	16	1 for 14,125	23	2
Ariz.	1302000	1802000	38	104	1 for 12.519	163	10
Ark.	1786000	1747000	(—) 2	152	1 for 11,750	112	15
Calif.	15717000	20296000	29	2,370	1 for 6,632	767	237
Colo.	1754000	2197000	28	196	1 for 8,949	138	20
Conn.	2535000	2859000	13	306	1 for 8,284	133	31
Del.	446000	593000	33	35	1 for 12,743	54	4
D.C.	764000	803000	5	107	1 for 7,140	18	10
Fla.	4952000	5912000	19	466	1 for 10,627	426	47
Ga.	3943000	4301000	9	294	1 for 13,412	349	29
Guam	—	—	—	—	—	—	—
Hawaii	633000	710000	12	65	1 for 9,738	42	6
Idaho	667000	771000	16	97	1 for 6,876	23	10
Ill.	10081000	11353000	13	2,102	1 for 4,800	—	210
Ind.	4663000	5715000	23	516	1 for 9,037	352	52
Iowa	2758000	2959000	7	363	1 for 7,598	96	36
Kan.	2179000	2498000	15	255	1 for 8,545	128	26
Ky.	3038000	3332000	10	253	1 for 12,008	248	25
La.	3257000	3695000	13	258	1 for 12,430	296	26
Me.	969000	1030000	6	133	1 for 7,454	27	13
Md.	3101000	3970000	28	195	1 for 15,902	392	20
Mass.	5149000	5514000	7	870	1 for 5,918	5	87
Mich.	7823000	10483000	34	830	1 for 9,425	751	83
Minn.	3414000	3856000	13	440	1 for 7,759	155	44
Miss.	2178000	2323000	7	135	1 for 16,133	211	14
Mo.	4320000	4957000	15	571	1 for 7,566	194	57
Mont.	675000	755000	12	98	1 for 6,888	20	10
Neb.	1411000	1590000	13	191	1 for 7,335	55	19
Nev.	285000	453000	59	31	1 for 9,194	37	3
N.H.	607000	652000	7	83	1 for 7,313	18	8
N.J.	6067000	6942000	14	730	1 for 8,310	335	73
N. Mex.	951000	1126000	18	75	1 for 12,680	94	8
N.Y.	16782000	20023000	19	1,908	1 for 8,796	1,143	191
N.C.	4556000	5226000	15	328	1 for 13,890	452	33
N. Dak.	632000	710000	12	78	1 for 8,102	31	8
Ohio	9706000	12258000	26	1,072	1 for 9,054	787	107
Okla.	2328000	2135000	(—) 9	270	1 for 8,622	62	27
Ore.	1769000	2433000	39	331	1 for 5,344	50	33
Penna.	11319000	12508000	10	1,458	1 for 8,039	475	146
P. Rico	—	—	—	—	—	—	—
R.I.	859000	931000	8	147	1 for 5,844	1	15
S.C.	2383000	2809000	18	164	1 for 14,530	253	16
S. Dak.	681000	776000	14	113	1 for 6,027	9	11
Tenn.	3567000	4035000	13	309	1 for 11,544	299	31
Tex.	9580000	11752000	23	820	1 for 11,683	937	82
Utah	891000	1151000	29	84	1 for 10,607	92	8
Vt.	390000	403000	3	40	1 for 9,750	22	4
V. Isls.	—	—	—	—	—	—	—
Va.	3967000	4462000	12	275	1 for 14,425	390	28
Wash.	2853000	3574000	25	386	1 for 7,391	164	39
W. Va.	1860000	2199000	18	167	1 for 11,138	164	17
Wis.	3952000	4606000	16	464	1 for 8,517	240	46
Wyo.	330000	392000	19	40	1 for 8,250	20	4

Note: The estimate is computed on the basis of one optometrist for 7,000 persons in 1970. It considers that by 1970 there will be an attrition of 10 percent of the optometrists currently licensed. It recognizes that some states need more optometrists per capita than do others. The 1 to 7,000 ratio is considered reasonable for the average.

Source: American Optometric Association.

CHART VII

LOCATION OF NONFEDERAL PHYSICIANS ENGAGED FULL-TIME IN THE SPECIALTY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

State	All specialists				Diplomates			Non-diplomates		
	Total	Clinical practice	Other full-time practice	Training programs	Total	Clinical practice	Other full-time practice	Total	Clinical practice	Other full-time practice
All physicians	11,321	9,996	211	1,114	6,892	6,733	145	4,429	3,263	66
Alabama	125	117	1	7	65	65		60	52	1
Alaska	5	5			4	4		1	1	
Arizona	65	64		1	40	40		25	24	
Arkansas	55	51	1	3	28	27	1	27	24	
California	1,257	1,141	19	97	872	857	15	385	284	4
Colorado	140	127	5	8	93	88	3	47	39	2
Connecticut	194	182	3	9	137	134	3	57	48	
Delaware	22	22			17	17		5	5	
Dist. of Columbia	126	104	4	18	82	80	2	44	24	2
Florida	272	255	1	16	173	172	1	99	83	
Georgia	152	142	2	8	82	82		70	60	2
Hawaii	43	43			24	24		19	19	
Idaho	33	33			18	18		15	15	
Illinois	662	559	11	92	389	379	8	273	180	3
Indiana	234	214	3	17	136	133	3	98	81	
Iowa	161	121	8	32	75	69	6	86	52	2
Kansas	105	98	1	6	57	56	1	48	42	
Kentucky	127	115	2	10	71	69	1	56	46	1
Louisiana	221	169	5	47	106	102	4	115	67	1
Maine	54	53	1		34	34		20	19	1
Maryland	205	157	11	37	100	91	9	105	66	2
Massachusetts	387	332	8	47	247	240	6	140	92	2
Michigan	410	320	17	73	231	219	10	179	101	7
Minnesota	221	160	15	46	130	114	14	91	46	1
Mississippi	67	65		2	39	39		28	26	
Missouri	274	221	4	49	162	158	3	112	63	1
Montana	41	41			25	25		16	16	
Nebraska	77	75		2	47	47		30	28	
Nevada	17	16	1		13	13		4	3	1
New Hampshire	40	39		1	24	24		16	15	
New Jersey	361	346	4	11	238	236	2	123	110	2
New Mexico	33	32	1		21	21		12	11	1
New York	1,597	1,388	24	185	1,037	1,018	18	560	370	6
North Carolina	205	171	9	25	95	89	6	110	82	3
North Dakota	30	29	1		21	21		9	8	1
Ohio	553	493	5	55	338	336	2	215	157	3
Oklahoma	115	109		6	48	48		67	61	
Oregon	124	110	1	13	82	81	1	42	29	
Pennsylvania	870	786	10	74	531	524	7	339	262	3
Rhode Island	52	49		3	27	27		25	22	
South Carolina	71	67	2	2	40	40		31	27	2
South Dakota	21	21			13	13		8	8	
Tennessee	164	144	1	19	98	98		66	46	1
Texas	486	443	6	37	292	290	1	194	153	5
Utah	63	62		1	45	45		18	17	
Vermont	20	18	1	1	12	11	1	8	7	
Virginia	208	176	6	26	110	106	4	98	70	2
Washington	186	182	1	3	111	110	1	75	72	
West Virginia	81	77	4		47	43	4	34	34	
Wisconsin	207	188	2	17	125	122	2	82	66	
Wyoming	18	18			13	13		5	5	
Puerto Rico	57	46	5	6	25	21	4	32	25	1
Other outlying areas	7		5	2	2		2	5		3

Source: Health Manpower Source Book Section 14, Medical Specialists
U.S. Department of Health, Education and Welfare
Public Health Service, Division of Public Health Methods, 1962

CHART VIII

CERTIFIED ORTHOPTISTS, 1964

STATE	ACTIVE	NUMBER OF COMMUNITIES	INACTIVE
United States	270	146	57
Alabama	1	1	1
Alaska	0	0	
Arizona	3	2	
Arkansas	0	0	
California	31	23	5
Colorado	5	2	
Connecticut	1	1	1
Delaware	2	1	1
Dist. Columbia	10	1	1
Florida	12	8	2
Georgia	10	2	
Hawaii	1	1	1
Idaho	2	2	
Illinois	8	5	3
Indiana	2	2	2
Iowa	6	2	3
Kansas	1	1	1
Kentucky	1	1	
Louisiana	1	1	1
Maine	1	1	2
Maryland	8	1	2
Massachusetts	5	2	1
Michigan	17	8	3
Minnesota	5	4	
Mississippi	0	0	
Missouri	11	5	1
Montana	1	1	
Nebraska	0	0	
Nevada	1	1	
New Hampshire	0	0	
New Jersey	11	7	
New Mexico	0	0	
New York	36	10	8
North Carolina	2	2	
North Dakota	1	1	
Ohio	16	10	8
Oklahoma	1	2	1
Oregon	6	4	1
Pennsylvania	13	8	2
Rhode Island	0	0	
South Carolina	2	2	
South Dakota	0	0	
Tennessee	4	3	
Texas	16	8	1
Utah	0	0	
Vermont	0	0	
Virginia	3	2	
Washington	5	4	5
West Virginia	0	0	
Wisconsin	8	4	
Wyoming	0	0	

CHART IX

PRESCHOOL VISION SCREENING UNDER THE AUSPICES OF:

STATE	None Known	State Health Department	Local Health Department	Voluntary Agency
United States	29	14 (7)	12 (1)	9
Alabama		(X)	X	X
Alaska	X			
Arizona	X	(X)	(X)	
Arkansas			X	
California		X	X	X
Colorado				X
Connecticut		X		
Delaware	X			
Dist. Columbia	X			
Florida	X			
Georgia	X	(X)		
Guam	X			
Hawaii	X			
Idaho				
Illinois		X	X	X
Indiana	X	(X)		
Iowa	X			
Kansas			X	X
Kentucky				X
Louisiana	X			
Maine		X		
Maryland	X			
Massachusetts	X			
Michigan		X	X	
Minnesota		X	X	X
Mississippi	X			
Missouri	X			
Montana		X		
Nebraska	X			
Nevada	X			
New Hampshire	X			
New Jersey	X			
New Mexico	X			
New York	X			
North Carolina			X	
North Dakota			X	
Ohio		X	X	X
Oklahoma		X		X
Oregon		X	X	
Pennsylvania	X	(X)		
Puerto Rico	X			
Rhode Island		(X)		
South Carolina		(X)		
South Dakota		X		
Tennessee	X			
Texas		X	X	
Utah				
Vermont	X			
Virgin Islands		X		
Virginia	X			
Washington	X			
West Virginia	X			
Wisconsin	X			
Wyoming		X		

NOTE: ( )—State indicates planning or interest in preschool screening.

CHART X

PRESCHOOL VISION SCREENING 1964 BY LOCATION

STATE	WHERE TESTED: Well Baby Clinic	Preschool Roundups	Nursery School or Day Care	Other
United States	6 (3)	13 (1)	6 (1)	
Alabama		X		
Alaska				
Arizona		(X)	(X)	
Arkansas		X		
California	X	X	X	
Colorado				
Connecticut				
Delaware				
Dist. Columbia				
Florida	(X)			
Georgia				
Guam				
Hawaii	X		X	
Idaho		X		
Illinois	(X)	X	X	Home
Indiana				
Iowa				
Kansas		X	X	
Kentucky			X	recreation center, housing project
Louisiana				
Maine				Home
Maryland				
Massachusetts				
Michigan		X		
Minnesota	X	X	X	
Mississippi				
Missouri				
Montana				community buildings
Nebraska				
Nevada				
New Hampshire				
New Jersey				
New Mexico				
New York				
North Carolina		X		
North Dakota				
Ohio	X			
Oklahoma	(X)	X		
Oregon				Screening clinic
Pennsylvania				
Puerto Rico				
Rhode Island				
South Carolina		X		
South Dakota	X			
Tennessee				
Texas		X		
Utah				
Vermont				
Virgin Islands	X	X		
Virginia				
Washington				
West Virginia				Home
Wisconsin				
Wyoming				

NOTE: ( ) — State indicates planning or interest in preschool screening.

CHART XI

GRADES IN WHICH CHILDREN ARE USUALLY GIVEN VISION SCREENING TESTS

School Grade	Number of States*
TOTAL	54
"All grades" or "Each year"	4[A]
Kindergarten through 12	6[B]
1 through 12	7
Kindergarten through 9	1
Kindergarten through 8	1
1 through 8	7[C]
1 through 6	1
1, 2, 3, 4, 6, 8, 10	1
1, 2, 3, 5, 7, 9	1
1, 3, 5, 7, 9, 11	1
1, 3, 5, 7, 9	1
1, 3, 5, 7, 10	2[D]
1, 3, 4, 7	1
1, 3, 5, 7	2
1, 3, 6, 12	1
1, 4, 7, 10	1
1, 4, 7, 11	1
1, 5, 8, 11	1
1, 3, 5	2
1, 3, 6	1
1, 3, 8	2
1, 4, 7	1
1, 5, 9	1
1, 6	1
1	1
Varies	1
Answer omitted	4

SOURCE: Belloc, N.B., Sight Saving Review 32:194, 1962

[A]On the basis of other information, two were tabulated as grades 1-8.

[B]In one of these states 35 per cent of the children are screened only in grades 1-8.

[C]In two of these states the upper age limit varies.

[D]One state also tests in kindergarten.

*Includes District of Columbia, Guam, Puerto Rico, and Virgin Islands.

Ophthalmologists have tended to meet these gaps in training and interest by hiring assistants, usually called orthoptists or ophthalmic aides. While these assistants perform a large part of the work in the pediatric segment of their eye practices, their training usually does not include child growth and development. Many of the assistants are young women interested in working with children. According to most recent information, there are currently 270 active and inactive licensed orthoptic technicians in the United States. (see Chart VIII)

Optometry, which literally means a diagnosis of refractive error, evolved as a specialized vocation at the end of the 19th century. The practice of the profession is licensed and regulated by all the 50 states, D. C., and territories. The 17,000 practicing optometrists in the U. S. reportedly perform 75 per cent of all vision examinations.[3]

Optometrists must have a minimum of two years of college to be eligible to enter a four-year course in any of the ten U. S. schools or colleges of optometry.

Better geographic distribution and greater numbers of optometrists make them more accessible to larger segments of the population.

In Orinda, California, there was recently a noteworthy joint study of school vision screening procedures. Screening procedure found most reliable was a battery of tests given by the optometrist.

B. *Extent of Vision Test and Care*

Vision Testing

Preschool vision attention, as was stated earlier, is perhaps the most important means of seeking out and correcting ocular and developmental problems before the crucial school years. Yet not enough is known about the extent and quality of preschool vision screening. According to the Savitz study, prepared for the U. S. Children's Bureau (Chart IX), 29 of our states report no such activity whatsoever, although some of these are in planning stages and have developed programs since that report. In 14 states, at least some preschool vision testing is undertaken under the auspices of the state health department. Another 12 carry on some activity through the local health department, while 9 states report preschool vision testing by a voluntary agency. Based on the limited amount of data available, it would appear that vision testing in the critical preschool period is woefully lacking in the U. S. (See Chart X)

Statistics on screening of school-age children are also sketchy, but somewhat more encouraging. The Savitz study reports that in 1963 almost 8 million school children (about 16.4% of the nation's school population between the ages of 5 and 17) were given vision screening as part of federally-aided maternal and child health programs.[3] The AOA estimates that at least another eight million were given some type of visual screening as part of purely state and/or local school health programs. There are neither records to substantiate the number of children who may have been screened nor information on the quality of such tests.

In schools which do attempt some visual screening, it is apparent that in many cases it extends only to a few grades. In some it may be carried out in intermittent years. Again, the Savitz study furnishes the most comprehensive data available. It found that in the case of the

federal-state maternal and child health programs, only four states offer vision screening in "all grades" or "each year." In 6 states, vision testing is said to be offered from kindergarten through grade 12. As a total, 27 states in 1962 offered vision screening in grades 1 through 6 or more. On the other hand, 16 offered screening in four grades or less.[3] (Chart XI.)

Actual methods of screening vary among the states, but in nearly all cases appear to be characterized by minimal standards of efficiency. According to a study by Belloc, the typical state handles vision screening under a law or administrative regulation which provides for joint responsibility of the departments of health and education in carrying out the program. Nurses and/or teachers, paid by local school districts, carry out the actual screening, using the Snellen wall chart. It is unlikely that any other test is used. Screening is done each year in the elementary grades, but in the typical state it is not done in the high schools. Children are referred for failure to read the 20/30 line of the Snellen wall chart. Nurses and teachers are also alert to signs of eye difficulty and refer students, regardless of their performance on the Snellen test, if problems are observed or there are complaints of eye trouble.[23]

Belloc adds that "the typical state is satisfied with its vision screening program and does not have difficulty with over or under referrals, or is unaware of them."

Vision Care and Training: But vision screening is just a part of the total picture. There is no doubt that a well-planned screening program is one answer to the manpower shortage in vision care—a first line of defense against the more common and obvious ocular deficiencies. Yet, many current vision screening programs are inadequate for the following reasons:

1) They are not planned to detect vision problems in younger children who are most in need of special care.
2) They do not utilize techniques to reach preschool children, infants, and adolescents.
3) They concentrate on quantity of children tested rather than on *quality* of testing.
4) They are not sufficiently concerned with follow up referrals and with the involvement of the professional community.

In short, a screening program alone is not the whole answer to adequate vision care because it *does not constitute diagnosis and care.* State and local governmental agencies which administer screening programs have done only one part of the job, though it is a vital and very necessary first step. In addition to initial testing, they have by and large not assumed responsibility for:

1) referring the visually deficient child to a vision specialist
2) providing adequate treatment at this consultation
3) checking on utilization of treatment recommended.

Vision care in any locality must embrace comprehensive programs planned and carried out by both educational personnel and vision specialists. So far, however, this is generally not the case. The number of preschool and school children who actually see a vision care specialist is strikingly low—well below the accepted estimate of children who need vision care, and infinitesimal compared with the ideal of a complete professional vision examination for every child between 3 and 5 years.

For example, a study by the National Center for Health Statistics for fiscal year 1964 showed that of the more than 16 million persons who saw an optometrist, less than 0.4% were children of preschool age. Only 9.0 per cent of the total were between ages 6 and 16. Similarly, of the 11.5 million Americans who visited an ophthalmologist in the survey year, only 1.6 per cent were under 6 years of age. Another 6.9 per cent of the ophthalmological visits involved youngsters between the ages 6 and 16.[24]

Statistics such as these clearly illustrate the fact that there exists today, not only a deficiency in the quality of vision screening, but an even wider gap in the bridge between mass screening and intensive follow up of professional vision care.

C. *Special Problem Areas*

Thus far, this report has referred primarily to vision in the average school or community setting. Its focus has been on the child with so-called "normal" vision, or one whose vision can be corrected so it presents no significant barrier to productive learning.

Yet there are, in addition, several problem areas in the vision care field today. Many of these areas have been so neglected over the years they threaten to reach alarming proportions if not given immediate, nationwide attention. These problems can be grouped under the general heading of significant visual impairments. This grouping contains many subgroups and all groups present challenging sociological problems.

The Partially-Sighted Visually Handicapped Child

Partial sight has been defined broadly as 20/70 acuity which cannot be further corrected with conventional means. One of the first deficiencies in the present treatment of partially-sighted children is that there are no official statistics on who they are or where or what they are in functional terms. With this disturbing void in knowledge, vision care specialists have no comprehension of the overall scope of the problem upon which to base a nationwide co-ordinated program for the partially-sighted child. Neither do the state or federal governments.

What little does exist in the way of firm information appears to indicate a genuine cause for alarm. For example, the most recent information is contained in a 1956 report prepared by the American Public Health Association entitled *Services for Children with Vision and Eye Problems:*

> "Only one child in 40 accepted for diagnostic or treatment services under state crippled children's programs in 1950 received care for a visual handicap.
>
> "Many children with less serious eye problems, who are now in public schools, are not receiving periodic screening tests and the corrective services they need to help them to perform at their optimum level.
>
> "Of the estimated 68,000 partially seeing children in the schools of America today, only about 8,000 receive the benefit of the special facilities required to equalize their educational opportunity.

"Some partially seeing children who can use their residual vision in the process of learning, are being educated erroneously as blind children.

"Few rural or small urban communities make provisions for special education of the partially seeing.

"Some children referred to schools for the blind have not had adequate psychological services or a competent examination to determine the cause of visual loss and to plan effective care and education."[25]

The Mentally and Visually Retarded

Again, the first glaring defect when assessing vision care needs of this category is the absence of reliable statistics on how many mentally retarded children have vision problems. It has been demonstrated beyond question, however, that the incidence of ocular defects among retarded children is much higher than for other groups.

A study published in the May-June issue of the Welfare Administration Journal, CHILDREN, estimates that "about 250,000 mentally retarded children of school age in our nation are functioning as best they can with uncorrected defects in vision." It adds that:

"The very children who can least afford it may well be educationally short changed because of the handicap poor vision imposes. At the present birth rate, another 25,000 babies will be born each year who will be classified as mentally retarded and will go through school with uncorrected, significant defects in vision."[26]

The estimate of this study on the prevalence of uncorrected visual defects among these children is based on results of a program in Detroit where 6,158 mentally retarded children were given vision tests by the city and state health departments. This screening revealed that a total of 1,313 children (or 21%) failed the test and were referred to optometrists, ophthalmologists, and osteopathic eye specialists. According to about 300 records received from these specialists, over 90 per cent of those examined were found to have significant uncorrected defects in vision.[26]

Retardation is of course a tragic occurrance. But also tragic is the fact that many children now considered mentally retarded or "slow" may in reality also be victims of visual retardation. Given a professional examination, visual training, and/or corrective aids, they may often exhibit marked improvement.

An article in the March 1966 issue of PARENT'S MAGAZINE reflects that of the nation's six million retarded, probably more than one million have been misdiagnosed. The article states:

"Among the first of these hidden handicaps to be distinguished were defects of the senses. It can be tricky enough to test the sight or hearing of a normal child. How do you do it when your patient cannot read, speak, understand instructions, or even think beyond the most primitive level? How do you even suspect such a problem?

"In a two-year study, 800 'retarded' children were sent to the University of Oklahoma Child Study Center. . . . Of the 800, almost half — 373 — were found to have normal or near-normal intelligence. And, once their real problems were treated, over 80 per cent of this pseudoretarded group showed either a normal or superior I.Q."

Today, too little is being done to detect and properly treat vision problems among the handicapped. The Savitz study concludes that although the understanding of vision in the mentally retarded is not advanced enough even to determine the functional role of many visual handicaps, "optimal vision for each child cannot be provided without timely professional care."[3]

The Brain-Damaged Child

As in the case of retardation, the brain-damaged child is apt to experience many problems in his sensory and visual-motor development. For example, a study of 98 children with cerebral palsy in New York City showed that 69 were considered candidates for special vision care. Only 20, however, were receiving such supervision.[27]

Were this figure to be projected as a nationwide ratio, it would be clear that we are handicapping our handicapped, where in reality much could be done at relatively little expense to improve their conditions through better vision. Ways of seeking out the brain-damaged child for vision screening are lacking, facilities to extend him the variety and quality of vision care service needed are lacking, the leadership to mobilize existing resources for better care is lacking.

Strabismus

Strabismus (the imbalance of the eye muscles, characterized by a squint) was once thought to be correctable only through surgery. Yet, through the practice of orthoptics and visual training, an increasing number of children afflicted with strabismus can be improved and corrected without surgery.

Perhaps the most comprehensive study of the subject is reported in Ludlum's *Orthoptic Treatment of Strabismus*. This study concluded that "orthoptics as a therapeutic measure in strabismus, can help three out of four concomitant, previously untreated, unselected (as to prognosis) strabismic patients." It adds that "a surprising 24 per cent of the patients in the 'cured' categories did not require the use of spectacles upon dismissal."[28]

Screening for strabismus is best accomplished at an early age. Yet the fact is that even among those areas which do offer some type of preschool screening, very few if any conduct screening tests for strabismus. As has been stated, most vision testing is limited to use of the Snellen E chart, which tests only distance visual acuity. Furthermore, those administering the tests generally have no professional training in the identification of strabismus. Another significant factor to bear in mind is the fact that when strabismus is found, frequently found along with it is amblyopia (poor vision on an eye due to disuse).

There are many needs in this field: better screening tests for children, greater demonstration and recognition of the value and need for orthoptics, and visual training in the treatment of strabismus, and better co-ordination between school and local health officials with members of the vision care professions.

Sociological Problems Linked to Vision

While vision problems are usually developmentally or psychologically related, such disorders may also relate to socio-economic conditions. In recent years, science and education have linked unsuitable socio-economic conditions ever more increasingly to physical impairments. And now, thanks largely to the leadership of the federal government, coordinated nationwide efforts are being made to eradicate the conditions.

Vision care has been noticeably absent or minimal in most of these programs. Let us mention just three as examples:

War on Poverty—There is much evidence to show that children from lower income families have a greater incidence of vision difficulties and a lower rate of vision care.

The fact that children from lower income families experience more vision difficulties was documented in the vision screening of 36,554 school children in Michigan by the state department of health. The report noted that in an economically depressed area:

> ". . . it has been our repeated experience that as high as 24 per cent of the school children will fail the Michigan battery of tests. Of this 24 per cent, follow up reports can probably be obtained on about half. This means that if we were to screen 1,000 children, and refer 24 per cent, half would send in reports of eye examinations and we would have complete follow up on 120 children.
>
> "On the other hand, if we should go into an economically favored area and screen 1,000 children in the same manner, considerably fewer, 8 to 12 per cent, would fail and be referred. In a very high area the number would probably not exceed 10 per cent, or 100 children. Obtaining eye examination reports would be accomplished more easily in such an area. We might receive reporting on 80 per cent of these children. So we have the situation where we know that 80 children have had examinations in an economically favored area, while in an economically depressed one 120 children have had examinations as a result of a similar expenditure of time, effort, and money on the part of the screening agency."[16]

The fact that children from lower income families receive less vision care is indicated in recent household surveys by the National Center for Health Statistics. It showed that of the families with less than $4,000 annual income, between 8.7 per cent and 8.8 per cent visited an optometrist in the survey year. The incidence of optometric visits was 10.1 per cent in the $7,000-$9,999 income bracket, and 12.0 per cent in the $10,000 or over income group. Furthermore, the proportion of white persons who had optometric visits (9.2%) was almost twice as much as that for nonwhite persons (5.3%).[24]

These striking facts have been noted by federal officials to the point where some vision screening has been instituted as part of the project Head Start program administered by the Office of Economic Opportunity. This is a welcome beginning, but so far it has represented a hesitant, incomplete action at best. Vision testing in the Head Start program, for example,

will bear little fruit unless there is direction and supervision by vision care specialists, unless there is a co-ordination of effort between teachers and vision care professionals, and unless some system of follow up care is developed. We stress the latter point in particular. It does little good to inform a child's parents that he has a vision defect—particularly if they are poor—unless some provision can be made to see that the defect is corrected through professional care.

Project Head Start, however, *does* have a head start on other antipoverty efforts when it comes to vision care. There is very little if any similar action being undertaken in such programs as the Job Corps, Neighborhood Youth Corps, and VISTA. In fact, in at least one city (Pittsburgh) where a neighborhood health center has been established with federal antipoverty funds, optometric services have been excluded.

Juvenile Delinquency—Certainly a major thrust of the federal government's commitment to building a "Great Society" lies in the eradication of juvenile delinquency. Based on the massive evidence that poor education and unstable home life contribute a major share to juvenile delinquency, great strides are being made by government in social innovation. Yet the government is doing little about the well-documented fact that poor vision is a coefficient of delinquency.

In 1962, some 550,000 juvenile delinquency cases were tried in court, involving youngsters 10 to 17 years old. Based on evidence already cited, one can only wonder how many of these young people had untreated vision difficulties which contributed to their behavior.

Thus far, there appears to be a total void in governmental efforts to bring vision care to young people with records of antisocial behavior. This is even true of the Division of Juvenile Delinquency in the Children's Bureau, which was established especially for work of this type.

Dropouts—There is little or no evidence of any effort to provide vision screening or vision care to dropouts or would-be dropouts. In many ways this problem is linked to those of the antipoverty program. Often a school dropout is from a low income family with low educational background. Unfortunately, this child's neighborhood school is also lacking in activities, such as vision screening. Thus the potential dropout is unquestionably the most neglected student when it comes to eye care.

This dilemma is typical of the vicious circle which surrounds vision care as a sociological necessity. Those who need it most do not receive it. Right now, America needs a bold stroke of leadership to pierce this circle of deprivation. Thus far it has not been forthcoming.

D. *GOVERNMENTAL SUPPORT*

State Activities: In general, it can be said that all of the states appear to be involved in varying degrees with at least some form of vision screening or vision care for children. As Dr. Savitz observes, however, "it is obvious that what vision care is available is frequently isolated rather than part of a coordinated effort."[3]

The typical state health department is apt to be involved to some extent in the following:

1) Controlling communicable diseases which endanger eye health, or which can be detected through vision screening.

2) Collection of vital statistics. This is generally limited to the reporting of congenital eye defects or birth certificates.

3) Safety engineering. Safety instruction may include information on the prevention of eye injuries.

4) Health education. Courses offered to teachers and students through state auspices are likely to include some general rules for proper eye care.

The greatest amount of state activity directly affecting vision care generally lies in participation in crippled children's and maternal and child health programs. Estimates as to the precise number of children treated under these federal-state programs are difficult to acquire. However, an indication is offered by figures published by the Children's Bureau in 1962. They show that only 775 children in 25 states were treated for congenital cataracts. Only 6,224 children in 16 states were treated for refractive errors. Only 12,400 children in 27 states were treated for strabismus. A total of 4,006 children in 31 states were treated for other diseases of the eye. In all, the total number of children treated for eye conditions that year was 23,405, or 6.1% of the total number of children treated for all types of conditions.

These figures do not mean that the remaining states did not have children with these specific conditions who were eligible for service. Rather, they mean the states which did not treat for these conditions do not cover them at all in their programs. A further analysis of these figures on a state-by-state basis will indicate that in many states only one or two children were treated for these conditions. Again, the reason is not lack of additional children eligible for treatment for these conditions, but lack of adequate case-finding coupled with lack of adequate financing.[29]

As is already indicated, it is difficult, if not impossible, to list precisely the extent of vision care support by the states. Statistics are either lacking or are based upon different methods of reporting. Although the Children's Bureau has been able to compile records based upon reports sent to its research department by state crippled children's services and maternal and child health services, the results have generally been inconsistent and sketchy.[3]

Another potential source of information on state vision care activities is the state public health plans filed with the Children's Bureau and Public Health Service every two years. While these plans are primarily administrative documents, they continue to provide a narrative summary of MCH and CC activities supported by federal-state funds. However, as Dr. Savitz concluded, "with few exceptions, they are relatively uninformative on a specific health problem like vision. Even when information is present, it is often inaccessible. The format is generally unstructured and unindexed. . . ."[3]

Thus, in the states there is not only a need for more comprehensive, extensive vision care services, but also for more accurate, uniform evaluation of programs and reporting of statistics on current operations.

Federal Support: By and large, federal support for vision care has been peripheral at best. While there exist no federal agencies solely occupied with vision problems, there are some which do offer a modicum of concern and support for programs designed to enhance the level of vision care. These agencies, together with a brief description of their role in providing vision services, are listed as follows:

1. *Division of Chronic Diseases, Bureau of State Services, USPHS.* The Division's Neurological and Sensory Diseases Branch employs several consultants in ophthalmological affairs who deal with, among other things, preventive pediatric ophthalmological practices and ways to convey them to the medical profession. The program also assigns ophthalmologists to state health departments to assist in carrying on vision activities.

2. *Division of Community Health Services, Bureau of State Services, USPHS.* The Division's Public Health Administration Branch, School Health Section has surveyed 83 urban areas and received information on their local vision screening programs.

3. *National Institute of Neurological Diseases and Blindness, NIH.* The Clinical Research Ophthalmology Branch Intramural program studies children for diagnosis and treatment of such diseases as infantile glaucoma, infections of the cornea, eye tumor, night blindness, and other retinal diseases. (Some research exists, also, on such problems as amblyopia, myopia, and strabismus.)

4. *National Institute of Child Health and Human Development, NIH.* There has been no intramural work on child vision at present.

5. *Division of Handicapped Children, Office of Education.* The Division administers two programs for handicapped children, authorized by PL 88-164. Section 301 of the law authorized grants to nonprofit institutions of higher learning to aid in the professional preparation of educational personnel. Section 302 authorizes grants for research and demonstration projects relating to education of handicapped children (including the visually handicapped).

   During the first two years of the program, more than $1.5 million has been allotted for preparing educators of visually handicapped children. More than $50,000 has been allotted for related research projects.

6. *Division of Services to the Blind, Vocational Rehabilitation Administration.* This Division provides vocational rehabilitation services for visually handicapped children between the ages of 14 and 16. It also offers leadership and consultation to state programs for the blind.

7. *Bureau of Family Services, Welfare Administration.* At present, all but 11 states provide for vendor payment of the cost of at least some health care, with federal financial participation in their Aid to Families with Dependent Children programs.

8. *Children's Bureau, Welfare Administration.* As has already been discussed, the Children's Bureau helps share in the cost of operating state programs for crippled children and maternal and child health care. Generally, these programs provide care for screening, plus care of some of the more severe eye diseases.

In addition to the federal activities just listed, some federal agencies do play varying roles in the collection of statistics and coordination of information affecting vision care of children.

The sole statistical source, in addition to the Children's Bureau figures already mentioned, is the National Health Survey, which has published some data yielding information on vision needs and problems of children. It is, in fact, the only government statistical source on this subject. Doctor Savitz, however, after an extensive review of the Health Survey data affecting vision, concluded that "more specific information is necessary." She added that "for future collection periods, questions might be re-evaluated to give more reliable prevalence data for the broad category of ocular problems."[3]

Among the agencies which help coordinate information on the vision needs of children are:

1. *Science Information Exchange.* This arm of the Smithsonian Institution distributes notices of current and recently terminated research projects in both the life and physical sciences, including many related to child vision. For example, 78 papers on vision were indexed between the period January 1962-June 1964. Many were concerned with children.

2. *Clearinghouse for Research on Child Life.* This clearinghouse is part of the Child Life Studies Branch, Division of Research, Children's Bureau. It publishes *Research Relating to Children* one or two times a year—some of it related to vision care.

3. *National Library of Medicine.* Through the Medical Literature Analysis and Retrieval System ("Medlars") the federal government can provide vision care specialists with a computerized index of medical journal articles.

This, then, is the present state of federal support in child vision care activities. Based on the information just listed, the following general conclusions can be made:

First, existing federal activities affecting vision care of children are marginal for each agency concerned. No one agency has been entrusted with major responsibility for improving the vision of the nation's children.

Second, there is little if any coordination and consultation among federal agencies which have responsibilities for vision care.

Third, federal statistics on the incidence of child vision problems and the extent of care being provided are either deficient or lacking altogether.

In short, the federal government is doing relatively little to care for one of the greatest resources our more than 77 million children will ever possess—the gift of sight.

FEDERAL ACTIVITIES CONCERNED WITH CHILDREN'S VISION

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE:

1. Vocational Rehabilitation Administration
    a. Division of Services to the Blind
        1) State Programs
        2) Research Grants
2. Public Health Service
    a. National Library of Medicine
        1) Bibliographic Information
    b. NIH, NINDB, NICHHD
        1) Intramural Research and Statistics
        2) Extramural Research
        3) Research Grants Index
    c. Bureau of State Services
        1) Division of Chronic Diseases
            a) Neurological and Sensory Disease Service Branch
                (1) Ophthalmological Consultant
                (2) Project Support
        2) Community Health Services
            a) School Health Section
                (1) School Vision Screening Information
    d. National Center for Health Statistics
        1) Cycles II, III, National Health Survey
3. Office of Education
    a. Division of Handicapped Children and Youth
        1) Physical and Sensory Handicaps
            a) Specialist in Visually Handicapped
            b) Research Grants
            c) Grants to Educate Special Teachers

4. Welfare Administration

    a. Bureau of Family Services

        1) Aid to the Blind

        2) Medical Care under A.F.D.C.

    b. Children's Bureau

        1) Health Services

            a) Maternal and Child Health Programs

            b) Crippled Children's Programs

        2) Research

            a) Clearinghouse; "Research Relating to Children"

            b) Research Grants

            c) Special Project Grants

SMITHSONIAN INSTITUTION:

1. Science Information Exchange

    a. Registers and Distributes Notices of Research Projects

LIBRARY OF CONGRESS:

1. Division of the Blind

    a. American Printing House for the Blind

    b. Talking and Braille Books for Visually Handicapped Children

OFFICE OF ECONOMIC OPPORTUNITY:

1. Project Headstart

    a. Ophthalmological Consultants

    b. Screening Preschool Children

PART IV—RECOMMENDATIONS:

TOWARD EXCELLENCE IN CHILD VISION CARE

In 1960 the White House Conference on Children and Youth adopted a recommendation "that periodic examination and continuous medical and dental care, including vision, hearing, and lingual problems, early detection and treatment of defects and abnormalities, as well as the prevention and early treatment of disease, be provided for all children."

The American Optometric Association endorsed this resolution when it was made in 1960. Based upon the assessment of the state of vision care just set forth, we endorse it even more strongly in 1966.

In the six years that have passed since the White House Conference, we believe that experience has dictated other principles that should underlie vision care, in addition to the need for early detection and frequent examinations. These are:

> "Comprehensive vision care must be made an integral part of the total national health care effort. In the same vein, optometric services must be associated closely with and integrated into the entire health care team.
>
> "Vision care must be *comprehensive itself.* It must encompass not only screening, but full visual examination, professional evaluation and any necessary follow up training or correctional assistance.
>
> "Vision care must be readily available to all children. It cannot be denied on the basis of political subdivision, educational level, income, race, or age. Visual disorders do not practice discrimination in their occurrence, they occur anywhere and everywhere.
>
> "These goals cannot be achieved overnight. The status of vision care in America and the public's awareness of its importance are far, far too low on the ladder of progress to speak in these general terms. However, for that very reason, it is possible, through a series of practical, realistic steps to make great strides ahead in a relatively short period of time."

The American Optometric Association welcomes the opportunity to present a five-point program designed to achieve these goals.

A. *VISION SCREENING AND EXAMINATIONS*

Ideally, every child, from birth to age 19, should have an annual vision examination. Additionally, those who need attention should be able to receive visual training and subsequent care as well as corrective and/or subnormal visual aids. Unfortunately, this care is beyond the financial reach of many Americans, and seemingly beyond the financial capacity of federal and state governments.

While a shortage of professional practitioners exists, the American Optometric Association is confident that practical workable steps can be taken which will make a marked impact on the nation's child vision care. Specifically, we recommend action in these areas:

1. *Better vision screening*

Federal, state and local governments should do everything possible to encourage earlier and more comprehensive screening of preschool children. Ideally, it would be desirable to launch a public-sponsored program whereby each preschool child between ages 3 and 5 is screened and later examined by a vision care specialist in the clinic or office. At present this appears to be beyond the reach of available financial and manpower resources.

There *is* much that can be done, however. All levels of government can cooperate in informing parents of the importance of preschool screening. Agencies can demonstrate how parents can observe the visual behavior of their preschool children in the home; can encourage more vision screening by health care personnel who see the preschool child often; can set up vision screening as part of well-baby clinics, visiting nurse programs, and neighborhood health centers. City health clinics and optometric college clinics can be encouraged to include vision screening for preschool children as part of the regular clinical routine.

In addition, the AOA urges that wherever federal programs involve preschool children, vision screening should be made a part of such programs, particularly to such programs as OEO's Project Head Start, the Foster Grandparents program, the Indian health program of the Public Health Service, and the maternal and child health program.

In regard to elementary school children, the AOA urges vision screening each year, from kindergarten to seventh grade and every other year through the 12th grade. The AOA is advised that sufficient public funds are already available to finance grade school screening. However there is strong indication that not enough is actually being spent to stimulate vision screening in the schools, perhaps due to a "communications gap" between Washington and local school systems. Rapid steps should be taken to build this bridge of information.

The AOA further recommends that every school undertaking a vision screening program do so only upon consultation with optometrists and ophthalmologists in the community. Whenever such programs are undertaken with federal funds, schools should maintain a consulting relationship with a licensed vision specialist.

2. *Professional Vision Examinations*

This report has stressed throughout that the lack of proper follow up care is perhaps the nation's greatest shortcoming in vision care today. It does little good to invest the time and money to organize a screening program if nothing is done about the child who appears to require professional attention. The American Optometric Association recommends governmental support to enable all children to receive a thorough vision examination by an optometrist or ophthalmologist. Current shortages of professional manpower will initially limit such care to those children who, as a result of screening, exhibit the greatest need for immediate vision care.

A rough cost estimate of such a program can be arrived at, based upon the 1965 population of 77,527,000 young persons under 19 years of age (for details, see Chart I). Assuming that the total number were given vision screening, it would be likely, based on previous experience in mass screening, that some 35% would require a follow up examination. Based upon prevailing average fees charged by optometrists, the total cost of such a program might be held to approximately $400 million. It would be unlikely, of course, that such a program would operate at total capacity immediately. One-quarter of this total could be budgeted during the early stages of such a program.

3. *Provision for Care and Correctional Aids*

Generally, it can be expected that most of the children who receive a professional vision examination will require care, such as visual training, correctional aids, and/or special aids for subnormal vision.

The cost of these professional services and ophthalmic materials for the total population of young persons would probably not exceed $285,000,000 and should be reduced in later years as visual care is provided those who have never previously received it.

Specifically, we urge revision of the Social Security Act to include more vision care services. Title XIX stipulates that the program will reimburse costs for ". . . eyeglasses prescribed by a physician skilled in the diseases of the eye, or by an optometrist, whichever the individual selects. . ." It adds elsewhere that reimbursement will be furnished or "medical care or any remedial care recognized under state law."

We suggest that this language is too vague, and that it excludes reimbursement for some types of vital follow up care, such as visual training. It particularly neglects to cover special methods and correctional aids employed in the treatment and management of severe vision impairments. We encourage legislation to amend this section so that states will know these important vision care procedures qualify for coverage.

Follow up care for those found in need should be stipulated in program planning. The Government should provide vision services for those unable to afford them. Parents with ability to pay should be encouraged to enroll their children in some prepaid or postpaid system of vision care, such as those developed by state vision service corporations which are affiliated with the Vision Institute of America, an American Optometric Association sponsored not-for-profit corporation.

4. We urge federal, state and local governments to do everything possible to encourage vision screening and follow up examinations among school children. City health clinics and optometric college clinics should be encouraged to include vision screening for preschoolers as part of the clinical routines. State governments should prepare and disseminate material encouraging mothers to take their preschool children to a vision specialist for a professional examination and evaluation.

5. Finally, the federal government should instigate visual screening procedures wherever its various programs involve preschool and school children.

B. *RESEARCH AND DEMONSTRATION*

At present there exists very little federal support for research and demonstration in vision care. The programs which do exist are fragmented and uncoordinated. Yet much needs to be learned and what is already known needs to be disseminated to those in the field who educate and care for our nation's children.

A great deal more information is needed on how to go about and develop screening programs. We, as a nation, need demonstration programs on how mass screening can be most effectively organized and utilized in rural areas. We need demonstration projects designed to integrate vision care more thoroughly with the comprehensive services of the local health clinics. We need more evidence about whether effective vision screening is possible in a well-baby clinic.

In the field of vision research, gaps in the present level of our knowledge provoke questions which could stimulate an endless array of projects. How does low income contribute to poor vision? How greatly is juvenile delinquency linked to poor vision? Does a deaf child use his vision differently? When is the best time to screen for strabismus? How often is vision a major cause of retardation? What additional deficiencies can be detected through the eyes or by an evaluation of the visual system? How important is good visual acuity in learning new skills for job retraining?

These are just some of the questions which could be answered if they received national attention through a strong program of research and demonstration. Such programs are desirable in themselves but become more imperative when government-supported screening programs are instituted.

C. *TRAINING ASSISTANCE*

The American Optometric Association suggests that assistance be extended to personnel serving all areas of vision care. We urge that such programs assist in:

1. Training elementary school teachers and nurses in vision screening procedures in the early recognition of vision problems.

2. Training educators in basic vision hygiene and safety practices so that such information be included as part of the regular school program.

3. Developing optometric school and college clinics as community health resources for vision care of children.

4. Enabling practicing optometrists, ophthalmologists, pediatricians, health administrators and other related personnel to undertake advanced studies relating to vision care of children.

5. Sponsoring seminars and meetings for educators, optometrists, psychologists, ophthalmologists and others to promote better interprofessional team work and increase knowledge in the visual care of children.

D. *IMPROVED STATISTICS ON VISION CARE*

The lack of adequate statistics on vision care of children or any other vision care population has already been pointed out. We are informed that authority exists through administrative action for the Department of Health, Education, and Welfare to develop better statistics. While many such avenues undoubtedly exist, the AOA makes three suggestions:

1. States using Federal funds under the Social Security Act should be required to use uniform reporting methods and forms.

2. The National Center for Vital Health Statistics should develop a survey to reveal the number and type of vision problems prevalent in this country.

3. Any program established to provide for mass vision screening, examinations and subsequent care should include provision for statistics showing the extent of such activities and their results.

E. *IMPROVED COORDINATION AMONG VISION CARE PERSONNEL*

While it has been pointed out that there is a notable lack of vision care activity nationwide, it is also true that too little communication exists among those who are currently involved. There is need not only for improved communications but also for smoother planning and elimination of duplication of effort among those concerned with vision care programs at both the national and the state levels.

As a partial step toward improving these conditions, the AOA recommends:

1. Creation of an advisory committee on vision care to the Secretary of Health, Education, and Welfare. This group should be composed of optometrists, educators, ophthalmologists, psychologists, and others involved in vision care. This group could assist the Secretary in devising plans and policy for developing and improving programs of vision care. It would also be called upon to advise the Administrator of the Welfare Administration, the Surgeon General of the Public Health Service, and the Commissioner of the Office of Education.

2. An interagency committee should be drawn from representatives of federal agencies engaged in vision care work. The members should hold regular meetings to coordinate their efforts and share information.

3. More vision care specialists should be employed within the federal service. The Public Health Service, for example, employs few ophthalmologists and, at present, two optometrists. Insufficient manpower prevents adequate intergration of vision care into the total national health care effort. Such personnel should be employed and diffused throughout all agencies where vision is concerned within the Department of Health, Education, and Welfare.

BIBLIOGRAPHY

1. *The Importance of Vision to a Creative Life in Freedom and Dignity.* Report to the 1960 White House Conference on Children and Youth from the Committee on Visual Problems of Children and Youth, Lois B. Bing, O.D., Chairman, American Optometric Association, 1960.

2. "What About Your Child's Vision?" G. N. Getman, O.D., *Vision Digest,* Spring, 1950, pp. 3-6.

3. From the manuscript of a still unpublished report by Roberta A. Savitz, M.D., entitled "Childhood Vision, Public Health Aspects," prepared for the Children's Bureau, Welfare Administration, U.S. Dept. of Health, Education, and Welfare.

4. Roman, Melvin, *Reaching Delinquents through Reading.* Charles C Thomas, 1957.

5. Fantl, E. W., and Perlstein, M. A., *American Journal of Diseases in Children.* 102:36, 1961.

6. U.S. Department of Health, Education, and Welfare, Children's Bureau, *Health of Children of School Age,* Children's Bureau Publication No. 427, 1964.

7. Blum, H. L., Peters, H. B., and Bettman, J.W., *Vision Screening for Elementary Schools, the Orinda Study,* University of California Press, 1959.

8. *Congressional Record,* August 27, 1963. 88th Congress, "Save Your Vision Week."

9. U.S. Department of Health, Education, and Welfare, Children's Bureau Publications, *Facts About Children's Bureau Programs,* 1965.

10. Karpinos, Bernard D., *Qualification of American Youths for Military Service.* Medical Statistics Division, Office of the Surgeon General, Department of the Army, 1962, 132 pp.

11. Dzik, David, "Vision and the Juvenile Delinquent." *The Journal of the American Optometric Assn.,* May, 1966, pp. 461-468.

12. Peters, Henry B., O.D., M.A., *Vision Care of Children In a Comprehensive Health Program.* (Research document prepared for the American Optometric Association. The author is Assistant Dean and Director of Clinics, School of Optometry, University of California, Berkeley.)

13. *American Journal of Optometry,* "The Changes in Refraction Between the Ages of 5 and 14—Theoretical and Practical Considerations," 29:445-459, 1952.

14. Lancaster, W. B., "Standards for Referral of School Children for an Eye Examination." American Journal of Ophthalmology, 37:710-718, 1954.

15. McNeil, N. L., "Patterns of Visual Defects in Children." *British Journal of Ophthalmology,* 39:688-701, Nov., 1955.

16. Blackhurst, Robert T., and Radke, Edmund, "School Vision Screening in the State of Michigan." *The Sight Saving Review,* Vol. XXXIV, No. 1, Spring, 1964.

17. Sloane, A. E., and Gallagher, J. R., "A Comparison of Screening Tests with Clinical Examination Results." *American Journal of Ophthalmology,* 35:818-830, 1952.

18. Theodore, F. H., and Johnson, R. M., Miles, N. E., Bonser, W. H., "Causes of Impaired Vision in Recently Inducted Soldiers." *Archives of Ophthalmology,* 31:399-402, May, 1964.

19. Yasuna, E. R., and Green, L. S., "An Evaluation of the Massachusetts Vision Test for Visual Screening of School Children." *American Journal of Ophthalmology,* 35:235-240, 1952.

20. Downing, A. H., "Ocular Defects in 60,000 Selectees." *Archives of Ophthalmology,* 33:137-143, February, 1945.

21. Flom, M. C., and Neumaier, R. W., "Prevalence of Amblyopia." *Public Health Reports*, Vol. 81, No. 4, April, 1966.

22. Hirsch, M. J., "Visual Anomalies among Children of Grammar School Age," *Journal of American Optometric Assn.*, 23:663-671, 1952.

23. Belloc, N. B., "School Vision Screening in the United States," *Sight Saving Review*, 32(4):194-198, Winter, 1962.

24. U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics, *Characteristics of Patients of Selected Types of Medical Specialists and Practitioners.* Series 10, No. 28, May, 1966.

25. American Public Health Association, Inc., *Services for Children with Vision and Eye Problems.* 1956.

26. Blackhurst, Robert T., and Radke, Edmund, "Testing Retarded Children for Defects in Vision," *Children.* Children's Bureau Publication, U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, May-June, 1966.

27. Schachat, W. S., Wallace, H. M., Palmer, M., and Slater, B., "Ophthalmologic Findings in Children with Cerebral Palsy," *Pediatrics*, 19:623-629, 1957.

28. Ludlam, William M., "Orthoptic Treatment of Strabismus," *American Journal of Optometry* and *Archives of American Academy of Optometry.* July, 1961, pp. 369-388.

29. U.S. Senate, Committee on Finance, *Hearings on H. R. 6675, Social Security Amendments of 1965,* Part II, p. 856.

30. Frostig, Marianne, Ph.D. *The Frostig Program for the Development of Visual Perception,* Follett Publishing Co., 1964, p. 8.

31. Sloane, A. E., "Identifying Children with Visual Problems," *Sight Saving Review.* 35:13-16, Spring, 1965.

32. Crane, M. M., et al., *Screening School Children for Visual Defects.* Children's Bureau Publication 345, U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, 1954.

33. Gesell, A., Ilg, F., and Bullas, B., *Vision: Its Development in Infant and Child.* Hoebner, 1949.

34. Frostig, Marianne, Ph.D., and Horne, David, "Assessment of Visual Perception and Its Importance in Education," *The A.A.M.D. Education Reporter,* Vol. 2, No. 2, April, 1962.

35. Kelley, Charles R., *Visual Screening and Child Development, the North Carolina Study.* Department of Psychology, School of Education, North Carolina State College.

36. U.S. Department of Health, Education, and Welfare, Office of Education, *The Organization and Implementation of Programs for Handicapped Children and Youth, 1964,* U.S. Government Printing Office, Catalog No. FS5,235:35057.

37. Jones, John Walker, *Educational Programs for Visually Handicapped Children.* U.S. Office of Education, 1966.

38. Savitz, R. A., Reed, R. B., and Valadian, Isabelle, *Vision Screening of the Preschool Child.* Children's Bureau, U.S. Department of Health, Education, and Welfare, 1964.

39. Apt, L., Editor, *Diagnostic Procedures in Pediatric Ophthalmology,* Little, Brown and Company, 1963, Preface.

40. Deutsch, P., and Deutsch, R., *Diagnosis, Retarded,* Parent's Magazine, March, 1966, pp. 56-57.

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